Exhibition of graphic notation: *Modelling the Universe – Propositional Notation of David Rosenboom*

Keywords: artscience, composing, David Rosenboom, graphic notation, installation, hybrid practice, new music, soundscape

EXHIBITION BRIEF

The exhibition envisioned has the potential to make two primary contributions to the art and research practice. Conceptually, the exhibition should become a statement that an artist might traverse visual art and notation/composition domains. From the perspective of expanding the creative practice, the exhibition will become a visual embodiment of the *propositional music* concept[1] – the approach to exploring scientific subjects or incorporating scientific intuitions in the compositional process. Which unfolds as modeling parallel processes and intuitions across many disciplines and domains of knowledge with compositional means.[2]

Examples of graphic notation of David Rosenboom were not presented before in an exhibition. Yet, audio and video samples, images, and some historic documents were displayed not long ago. One such event was an exhibition of musical software at the White Chapel Art Gallery in London where in 2017 the HMSL (Hierarchical Music Specification Language) co-developed by Rosenboom with L. Polansky and P. Burk was presented. Another instance was the research-exhibition exploring the practices and ideas adjacent to telepathy called *Cosa Mentale* that took place at Center Pompidou-Metz in 2015-16. The neuromusical work of Rosenboom was featured along with the brainwave music of Alvin Lucier.

The exhibition of graphic scores itself, as a genre, of course, has precedents.[3] My vision is to present **eight original multi-disciplinary compositional pieces** in the form of graphic notation that would be covering about six decades of the compositional work of David Rosenboom (1966-2019). The gallery would be contextualized with historical archival materials used in/for the development of the pieces and research-based entries. As well, the pieces presented would be expanded by immersive projections, sound and video recordings, and adjacent artifacts used for the creation of the compositional works.

I. CONCEPT

To enter the exhibition attendees will be given a map of it. They will need to determine an entry point by drawing a *sentic shape*[4] on a touchpad. This sentic shape will be analyzed by a program and coordinated with the map of the pieces shown. The program will give access to those pieces most corresponding to the sentic shape drawn and allow an attendee to activate them. This might include increasing lighting in the relevant section of the exhibition that's otherwise dark.

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[1] Rosenboom, D. (2003). Propositional music from extended musical interface with the human nervous system. *Annals of the New York Academy of Sciences*, *999*(1), 263-271.

[2] N.B. There's a tradition of doing so that proved to be fruitful despite its speculative nature – one can think of *Harmonices Mundi* of J. Kepler, for example.

[3] For ex., exhibition *Between Thought and Sound: Graphic Notation in Contemporary Music (*2007) at The Kitchen: https://thekitchen.org/event/360

[4] The concept of sentic shapes – developed by scientist and musician Manfred Clynes – explores the relation between musical form (and other properties of a particular composition) and the shape (or drawn curve)

The **exhibition space** will be comprised of three circles (cycles) of concentration and enlightenment – inspired by the concept of *enso* and other Buddhist motifs. To reach the light, and clarity one needs to travel from darkness (higher level) to the lower level, traveling to the core – the point of enlightenment. Here I have two other cultural references to use. First – the Cave Myth of Plato, and second – the Hell of Dante.

- Design-wise, these circles should be physically shaped and repeat the form of an amphitheater. The upper level would propose only one sensory input – sound. I assume it to be the dark section. On the upper level, an attendee would be able to listen to a fragment of one of eight pieces created by the composer.
- The second level would offer a greater sensory input, providing more light and a visualization of a score that would be added to the sound of the same piece activated. I assume this section to be moderately lit.
- The lower level, symbolizes a threshold of understanding, the ultimate enlightenment. It will provide – with visualization still being available in the background – a historical context for the creation and performance of a piece explored. It will provide detailed information about the idea of a piece. The sources used would come from the archive. I assume this level to be very well-lit.
- In the center of the system will be a projector directed to the 2nd level. I assume that some palpable artifact synthesizing the concept of this installation should be put in the center.

Wholistically, the layout of the exhibition is inspired by our universe – reflecting the creative strategy of universe modeling pursued by Rosenboom in his pieces. Eight pieces correspond to eight planets. And the projector is a symbolic sun. The implied dynamics of moving from a darker space to a lighter one mimics traveling through our solar system.

The higher level [audio space] provides only a superficial, immediate perception-based idea of the piece since an attendee can only hear. The medium level [visual space] enables a greater comprehension of the idea of a piece explored. It also fosters aesthetic apprehension. The lower level [intermedia space] provides one with details – allowing one to form a complete idea ("gestalt") of a piece to come to a certain understanding of it.

II. SCHOLARLY BACKGROUND

The envisioned living aesthetic and experimental environment originating from the graphic notation material of the composer David Rosenboom would be a statement on the ongoing trends in contemporary art museums. As a scholar, whose main temporal references are the late 1960s-1970s, I greatly appreciate this epoch in the history of contemporary art museums, galleries, and performance spaces. The reference time is marked by the spread of artist-led spaces and the increase of interest in countering the mainstream culture by endorsing complex

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associated with it. The shape was speculated to represent the affective response of a perceiver to sophisticated auditory stimuli. (Clynes, 1977) artwork. The kind of work that doesn't simply reproduce objects as they are – note the famous discussion about whether art should reproduce nature or social reality – but actually creates radical visions of alternatives and futures.

The proposed exhibition would be a statement on the mission and function of contemporary art museums. To be in sync with the time, as I am deeply convinced, contemporary art museums need to prioritize the noble mission of providing support and resources for the radical imagination of artists. The priority that is now dumped by administratively encoded and mechanistically managed representation of social groups. The discussion of the excesses of the identity turn and how in fact the social justice efforts close the doors for those artists and curators who do not fit into a quota remains in the grey area of unspoken. Yet, I propose not to argue against the agenda, but to present a different style of thinking. Thinking in a way that is "abstract" and transcends the immediate individual and group concerns. I propose to try looking at the processes and phenomena with due humbleness about the human place in the universe. I propose to try to look beyond the immediate self and now, and to think generatively. To appreciate **art as a visionary tool** – free of the reality checks that science or engineering require.

Observing for a while how little attention and financial support for investigatory and multidisciplinary practices receive in our days, I feel somewhat nostalgic about the times when such projects as Experiments in Art and Technology or the Festival of Contemporary Arts at UIUC were possible. This makes me look for an opportunity to revive the model of a contemporary art museum as a space for investigation – a space for the creation of new practices in arts and beyond. This exhibition project would be an argument in support of a **cross-disciplinary investigation** of subjects not limited to the socio-political domain of human culture. The exhibition is an argument for museums being agents of culture-making, in its broadest sense.

- Art-science and-technology convergence in the second half of the 20th century

One way to approach a comparison of the two prominent and pioneering art-science/art-technology projects, the *Center for Advanced Visual Studies (CAVS)* at MIT and the *Experiments in Art and Technology (E.A.T.),* affiliated with Bell Labs, would be to focus on the views of their founders and leaders. And the difference between the perspectives of the engineer Billy Kluvier (1927-2004) and architect Gyorgy Kepes (1906-2004) is crucial, complicating my naming task shifting from "science" to "technology" companions to "art." To put it briefly, Kluvier did believe in art-technology collaboration while Kepes (a student of the original Bauhaus) was about the art-science convergence. Belief is an intentional word here. The perspectives of the two were not well supported by theoretical elaborations (discarding either engineers or scientists as strategic allies) but rather were informed by their experience and work environment. Though it's not a secret that both E.A.T and CAVS due to their affiliation with Bell Labs and MIT benefited from the governmental funding. This, in the context of the overseas war campaign of the US, became a problem for artists and for Kluvier and Kepes personally. The ideological (in a non-political sense) distinction between the two came from the fact that

Kluvier believed in the possibility of collaboration between artists and engineers while considering sciences somewhat adjacent to arts – thinking of both as pursuing greater world comprehension. While engineering for Kluvier was a separate kind of human activity (which contradicts the ancient Greek notion of ars and techne) – it was somewhat a means of active world change. (Goodyear, 2004, p. 612-622) Compared to the art-engineering/technology orientation of the E.A.T. and *Art & Technology (A&T)* – programs that were explicit about seeking a fruitful collaboration between artists and industries on visionary pursuits – the orientation of CAVS was more directed towards systematic training of the new generation of artists and researchers who would be able to combine the best of two worlds. In a way, while in the position of director of CAVS, Kepes did a great job of promoting Bauhaus principles. (Ibid, p. 623-629)

Continuing with the A&T, the idea of Maurice Tuchman (back in the 1960s – a young and pretentious curator at LACMA) was in matching state-based technological companies with artists for collaboration on art projects that had innovative potential. Thus, Tuchman both ensured generous funding of the exhibition through corporate partnerships and encouraged creating new art forms. And indeed, he had significant success with this idea – 37 companies contributed to the exhibition and 40 expressed formal support. Though what seems to be a bit problematic – given the timeline of the project development – the curator started with the industry and funding negotiation. Tuchman's selection of artists' proposals was based on his own prognosis of the likelihood of a win-win collaboration between artists and industries. (Tuchman, 1971, p. 9-29)

In our days, discussing the resurgence of the art and technology program at LACMA in the 2010s some authors heavily criticize contemporary art-tech collaborations. Putting in focus the corporate partnership strategy adopted by the art-tech nexus in the context of the Cold War and analogizing it to the heyday funding sources nurturing the Art and Technology Lab at LACMA (Google, Hyundai, NVIDIA, SpaceX among others) authors somewhat claim that the todays' proponents of the convergence didn't learn from the past and basically reproduce the same model. (Beck, & Bishop, 2018, p. 226-36) Yet, I do believe in the possibility of a benign collaboration of artists with technology producers, and business owners. Of course, it will require a certain caution – to avoid the scenario when art becomes a tool for promoting corporate products. But denying the possibility of collaboration on the greater societal level, preferring to divide into camps, and contributing to further polarization is the dead-end. To me, examples of the E.A.T., CAVS, and – to a lesser extent – A&T suggest some principles to follow. None of the projects betrayed art and research for the sake of money. All of them embraced the complexity of promoting collaboration between different groups of knowledge and expertise. In this light, the re-emergence of the art-and-technology program at LACMA to me is a positive sign.

Art historian Cristina Albu in her article explored a little-known example of art-tech collaboration that unfolded around the *Magic Theater* exhibition that took place in 1968 at Kansas City's Nelson Art Gallery. In addition to the unusual location of such innovative practice (all well-studied historical projects took place on the East or West Coast, and more specifically in NY or LA) shows us that there was some innovative activity in other parts of the country, Albu shows us something conceptually important. As the author shrewdly highlights – before the audience of museums got to the point of appreciating intimate and "odd" performances/installations, it was risky for cultural institutions to support innovative interdisciplinary activity. For a regular attendee, it was uncomfortable to be exposed to some artistic act that would require personal involvement in an exhibition. The new type of participatory installation in fact proposed an observer to become an actor, which was a shift from the passive consumption model. Estranging what's today considered a normal museum installation, Albu reminds us how dramatic was the shift over the last few decades in public perception of contemporary art practices. (Albu, 2018, p. 125-7)

- Contemporary examples of convergent installations and hybrid practices

Turning to some contemporary examples of art-science-technology merging installations, I would like to consider three cases of recent brainmedia installations. First of them is the long-term project *Mutual Wave Machine* which traveled to several countries over almost 10 years pursuing what the authors call – crowdsourcing neuroscience. The pursuit of its authors was to explore the phenomena of human connectedness (i.e., synchronization of biorhythms) relying on the data provided by BCI devices that audience participants wear while willfully entering the relatively intimate cocoon of the machine. To make the experiment reliable, authors need to ensure that participants indeed could genuinely engage with each other in an artificial setting. This made the authors seek to create an immersive interactive environment that would encourage meaningful aesthetic and social experiences. (Dikker et al, 2019, p. 161-166)

Another recent example of a hybrid long-term movable installation exploring phenomena of intimacy on the neurological level is the work of K. Lancel and H. Maat called EEG KISS. A couple of artists explore how BCI-mediated interaction (kissing in public while wearing an EEG headset) might evoke a reflective and transformative experience in the two self-disclosing participants and the witnessing public. The artists tracking and analyzing the brainwave change as well as collecting verbal impressions of participants tried to investigate what happens to sensory perception when engaging in an intimate act in public. (Lancel et al, 2019, p. 207-216)

The final example of a recent art-science installation that pursues both research and the creation of an aesthetic experience is an illuminated brain created by the researcher L. Jade who was assisted by S. Gentle. The two created a large illuminated interactive sculpture called Brainlight. The artifact is controlled by a wireless EEG headset detecting the neural activity of a participant that then is translated into a light display within the sculpture. The sculpture itself provides three lighting modes: green, blue, and red, corresponding to Theta, Alpha, and Beta waves. The idea driving this project and research was in creating an interactive art experience that could also exemplify a technique for the accurate collection and processing of EEG data aesthetically. (Jade, & Gentle, 2019, p. 229-235)

- Graphic notation & new curatorial strategy for the composed artworks

Writing in 1968, Evarts interrogated whether a supporting compositional practice (notation) somewhat traverses the domain of music and enters the sphere of visual arts. Discussing "a kind of revolution in the notation of some contemporary music" and the emergence of new musical languages the author argues that the visual fantasies emerging in the domain of composing have some objective causes. (Evarts, 1968, p. 405) The revolution in musical practice started with the introduction of analog computing technology to the compositional processes in the late 1950s, and the beginning spread of electronic musical instruments, did require the invention of new compositional languages. Then newly emerging notation, compared to the standardized lingua franca, did permit higher complexity of musical structures created. The graphic notation could incorporate various sound events exemplified by but not limited to noise, aleatoric and improvisational elements, etc. (Ibid, p. 411)

The last project of John Cage – due to his sudden death in August of 1992 – the exhibition *Rolywholyover A Circus* was developed with the assistance of many artists at MoCA and then went on tour to other museums in US and Europe in 1993-94. The author of the article suggests considering the new curatorial strategy that emerges when a composer creates an exhibition as a composition. The process of "composing an exhibition," as Belford highlights, assumes a certain degree of indeterminacy – setting general parameters that leave a lot of space for improvisation. The most interesting conceptual principle I see in this exhibition concerns engaging visitors in an active role. Proposing attendees participate in the artwork and – to an extent – become a part of it. As Belford so nicely puts it, there's something very attractive in destabilizing the sanctity and control of the museum. Instead – offering openness, transparency, and vulnerability to encourage unrestrained creative expression. (Belford, p. 1-6)

III. REALIZATION PLAN

- Space requirements

Being constructed from scratch, the **exhibition would require a big empty open space** with little or no incoming natural light. Decent acoustics and stereo sound speakers would also be required. It would be preferable if the floor wouldn't resonate when an individual steps on it. Blank dark walls and ceilings would be most appropriate for the exhibition construction.

- Working group

Continuing the conversation of the **human resources needed** for exhibition design and display, I would propose the following minimum. The author-originator of the source material would need to provide access to the materials and give an expert commentary on the pieces' development. Additionally, the author would need to select the sound examples played on the second level of the installation. The visual component of the 3rd level would also need to be designed in collaboration with the author. The second person of high importance would be a curator. A curator would be making the final decisions on what to include in the display and what to omit, how to make the message delivered with the exhibition clearer and more relatable for the target audience(s), what would be the strategy for the media campaign and outreach, etc. All the choices and decisions should be supported by in-depth knowledge of the author's biography, research, and music. Realization of this exhibition/installation would essentially require the engagement of a light artist, sound engineer or (spatial) sound artist, designer (specializing in kinetic/movable objects), and a programmer – or, better, algorithmic artist.

- Time of display

Given the resources needed to run the installation, it would unlikely be on view for **longer than 3 months** – which is also a standard period for a temporary art installation in a popular exhibition space. The display would require at least one technician to be constantly onsight to "run" the installation and make sure that the interaction with objects is safe for participants. As well, the exhibition display would require at least one person to guide or instruct attendees at the entry point. The latter would likely need some technical (programming) competence to fix the algorithm quickly defining sentic shape – if something would not work perfectly.

- Conservation

The complex and interactive nature of the installation makes partial **conservation** efforts almost irrelevant. The artwork created on the third and second levels would be mostly intangible and some of it would be a subject to copyright; while materials used on the first level would need to be returned to the author and continue their existence as a part of the archival collection.

In this connection, the best way to **capture the exhibition** would be by creating media materials. By those, I mean objects ranging from online photo galleries and interactive e-maps to short films, playlists, and exhibition booklets. But these media would be mostly retrospective.

- Outreach

Thinking of the **prospective campaign** drawing attendees to the exhibition – I would consider social media promotion; traditional posters presented outdoors or as e-advertisements (to go beyond the followers' bubble); an opening reception event with the author–curator discussion of the concept of the exhibition; publishing an interview or a long-read article devoted to the forthcoming exhibition.

- Challenges

The **main challenges** I foresee with this project are of both practical and conceptual kinds.

The practical issue is related to finding a curator and a hosting venue that would endorse a highly complex multidisciplinary project that requires broad expertise, collaboration, and significant funding. The exhibition project seems to traverse toward an installation. This creates the need for input from people of many skills and broad expertise. If the sound aspect might be worked out by the composer himself, (perhaps with the assistance of a person specializing in spatial sound), such components of the installation as an algorithm analyzing sentic shapes or visualization of scores would require the help of other artists and programmers. And the help, of course, would need to be rewarded. Additionally, ensuring a proper space for the circular exhibition comprised of multiple layers would be a critical factor in making a decision about where it will ultimately take place. In the same relation, it's not unlikely that the complex multi-media exhibition-environment would require full-time technical assistance. Finance-wise, this circumstance might be affecting the duration of the installation display.

The conceptual challenge, specifically related to the aspired audience, would be making the exhibition approachable and relatable to people of many backgrounds. The inherent complexity of Rosenboom's ideas and the cross-disciplinary sources informing his work may produce an epistemic discomfort in a visitor. Thus, I see the solution not in reducing the complexity for the sake of intellectual democratization of the exhibition, but in creating many interdisciplinary references embedded in the installation. These references would serve as entry points for people of various expertise and life trajectories: for some, nebular hypotheses and astronomy might be attractive; for others, concepts of evolution; for others, eschatological/literary motifs; and some might appreciate the artistic avantgarde spirit of this presentation.

- Host and partner institutions

The preferable **hosting space** in the area of the composer's residence (Southern California) meeting the practical parameters described above would be the LACMA – Art+Tech Lab.

Another factor that makes this space preferable is the programming of the Lab, that – as described in the theoretical section of this proposal, could perfectly endorse this exhibition by providing relevant expert support and resources.

Speaking of the **partnering institutions** – CalArts, Santa-Clarita Arts Council, Los Angeles Arts Council, Leonardo/MIT Press, UCLA Art|Science Center, and Getty Research Institute are potential collaborators to consider. Some units on the list have a long-term history of collaboration with the composer while others are known for their support and promotion of art-science/technology projects and programs.

- Audience

Artists, musicians, scientists, scholars, and the broader public.

- Funding

The exhibition is anticipated to receive primary **financial support** from the hosting space. In addition, realization of the project may be supported by the LA County Arts Council, National Endowment for Arts (NEA), and private donors.

IV. EXHIBITION DEVELOPMENT

- Design and layout

The **design of the exhibition** will be described as the best-case scenario and might be adjusted depending on the resources available. Taking a bird's eye view, the following design components seem to be crucial: 1) audio/sound installation, 2) visual projections of the graphic scores, 3) historical sources/archival materials, and 4) sentics-based mapping "game."

The three layers of the exhibition-environment will lead an attendee from the pathway of minimal sensory input – sonic introduction to a piece – towards the other layers providing greater saturation with sensory inputs. For a better sense of the hierarchy of the three levels a visitor will be proceeding through: the higher level is associated with the verb "to hear", the middle level with the verb "to see", and the lower level with two verbs "to understand/to imagine" – analytic and synthetic indicators of cognitive processes.

Each of the 8 pieces will have a physical borderline from one another. Thus, to ensure that an attendee will coherently move through the three perceptual levels designated for a particular piece. It is envisioned that an attendee will proceed with an exploration of a piece by turning on fragments that they want to discover.

I assume to ensure considerable interactivity in this exhibition by introducing the map and "game" elements. Provided with a map of eight smaller universes (compositional works) within a bigger universe (exhibition-environment as a whole), one will be encouraged to draw a shape on a touchpad. The shape then will be analyzed by an algorithm and correlated with a particular piece an attendee will be proposed to discover. The presence of a human within a section of a particular piece will be activating it. (See schemes 1 and 2 in the *Appendix.*)

- Material presented

Eight selected graphic scores represented on the composer's website and in the archive materials:

1) *A Precipice in Time* (1966) – this score presents an investigation of the simultaneous perception and experience of time in long (macro-scale) and short (micro-scale) dimensions. It begins by treating the length of the piece, twelve minutes, as the wavelength of a very, very low tone, and considering the time scales of other formal elements, duration of sections, musical event durations, rhythms, pitches, and even colors of light, as harmonics of the twelve-minute-long waveform. The notations are also created with a scale of degrees of specificity. It starts with traditional Western notation, and then, step by step, aspects of that notation that articulate precision are stripped away, until only graphic shapes suggesting sound types and dynamics remain. Thus, a precise time structure is combined with varying degrees of precision in its expression.

2) *Then We Wound Through an Aura of Golden Yellow Gauze* (1967)[5] — this score presents a universe of potential sound relationships mapped in space and defined according to a principle of parametric opposites. The most visible of these might be the parameter of density; the densest sound space is posed against the least dense on the opposite side of the circular map. A transparent overlay is used to coordinate a group of players who may agree on choosing particular pathways to follow in traveling through the map. The symbols in closed loop figures represent musical units, similar to phrases. Circles and squares define how sounds start and stop, while other symbols along lines determine how sounds evolve in their duration. The score is one the first examples in DR's work presenting a true configuration space, a mapping of the possible states of a musical system. Again, time is emergent.

3) *And Come Up Dripping* (1968) — this score is inspired by projective geometry, a form of geometry in which "parallel" lines do eventually meet, a non-Euclidean space mirroring the way we see, wherein things converge in distance. A solo oboist follows boxes tangent to a circle, once around the circle for each of four score pages, containing notations for types of sounds. An electronics performer follows the soloist, making actions indicated along vectors inside the circle, and performing changes in the time parameters of functions applied to electronic processing of the soloist's sounds. The notation is inspired in part by theorems in projective geometry about intersections of lines related to tangents inside and outside of conic sections, (Pascal, 1640 and Brianchon, 1806). Again, time is emergent and temporal relationships are relative.

4) *On Being Invisible* (1976-1977)[6] – this "Hypothetical Behavioral Phase Space" depicts a model related states of consciousness associated with waveform components found in the human brain electroencephalogram (EEG). Beginning with an undefined center (?), several circular bands represent EEG coherent waves, delta, theta, alpha, and beta,

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[5] 3D visualization of this score score – exemplar for the graphic scores' to be displayed on the middle level of the exhibition setting: https://vimeo.com/573204831

[6] The linked description serve to exemplify multiple contexts of creation and performance of a piece: performance of *On Being Invisible* at Music Gallery (1977), performance at the Western Front (1977), and as "Las Ondas Cerebrales" for the conference/festival in Mexico (1978). This kind of details will be presented on the lower level of the exhibition.

representing states of conscious ranging from relatively unconscious to undifferentiated attentive to highly calculating states. Orbiting the circle is a field of event related potential waves (ERPs) representing the highly differentiated experiences associated with the occurance of complex sensory events.

5) *Zones of Influence* (1985) — the five parts of this work each explore particular propositional music models. Section III explores the nature of time with that are referred to as probability rhythm shapes. These are function shapes derived with Laguerre polynomials, which arise in certain aspects of quantum mechanics. Here they are used to determine the probability that a percussionist's actions will or will not cause a significant change in an electronic sound texture. The player has to learn how to feel rhythms of probability and interact with them. Section V uses the same function shapes to create a counterpoint arboretum of intertwining, emerging forms. Section I (colored diagram) is about evolution (transformation) of forms (melodic, rhythmic, dynamic shapes) from one form (origin) into another (target). The superimposed colored lines show some of these shapes.

6) *Champ Vital (Life Field)* (1987) – this piece is described as an Introduction with Themes and Transformations. The transformations are melodic, using methods to bend and transform shapes inspired by ideas of morphogenesis and evolution. This form diagram shows a superposition and rotation of two two-dimensional spaces ·(a special kind of four-dimensional space) showing trajectories, as shapes are transformed, one into another. One of the two-dimensional spaces maps similarity of shapes to each other using a shape correlation technique. The other maps similarities using a concept called mutual information, which measures how complex a transformation of one shape into another might be.

7) *Twilight Language* (2004) – the score for this piece presents a series of music configuration spaces in a similar manner as Zones of Coherence. (See description for 1), all of which applies.) A difference in this case is that each of the four main scores presents a field of eighty-four cells (boxes), some of which are filled with musical notation, and some contain symbols for sound categories related to those delineated in a sound meditation practice called Nada Yoga. With these as prompts, the player is free to fill any chosen number of these cells with improvised sounds before entering and/or after exiting the cells with musical notations. Again, time is emergent. (NOTE: try to use two adjoining printed pages together, as has already been done for Zones of Coherence, to show a complete section page.) One additional difference is that all of the musical notation is the result of some kind of transformation of a "Twilight Language (Theme)" shown on the final page of the complete score. This is reminiscent of transformation functions used in a number of other Rosenboom pieces.

8) *Quartet for the Beginning of a Time* (2019)[7] — the propositional model for this piece imagines a way of thinking about how a time–a universe–might dissolve into undifferentiation, followed by a new emerging. The notation reflects how various musical parameters articulating the form of the piece vary in their clarity or diffuseness,

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[7] Excepts of performance of the piece that may be included in the exhibition design: https://vimeo.com/711763880

moving from traditional, classical notation into a sequence of configuration spaces with fields of symbols for raw sound possibilities the players may interpret in various ways.

- Cultural relevance

Enlightened by the conversation with artist and researcher Ben Grosser, I would reiterate a critical need for **interdisciplinary mediation**. The ability to talk across epistemic and disciplinary boundaries is a rare skill, if not an "art." However., acquiring it enables us to set critical questions regarding each other's practice, and to enhance the development of new/refined concepts via cross-pollination of ideas and insights. Some questions might be answered or even asked only if to have apprehension about various perspectives and styles of thinking. For example, as my interlocutor suggested, why do people love art yet value science? (Which reflected in popular enchantment with art, yet the astonishing discrepancy in funding of arts and sciences.) This is not a trivial question.

I see this exhibition crossing art and science domains as an opportunity to propose such critical questions as well as to speculate about opportunities for convergence or complementarity. Developing the exhibition, it's planned to explore how this project might help the audience to value things that are hard to understand and to invite more people to proceed further in the domains of the unexpected. This exhibition would be an argument with a creative strategy of its own. Assuming that science is seeking to produce reducible imagery, while art tends to create complexity, claiming that science exhibits a systematic attempt to resolve problems while art examines a culture in order to find problems – I am going to collide these two perspectives in the conceived exhibition *Modelling the Universe – Propositional Notation of David Rosenboom.*

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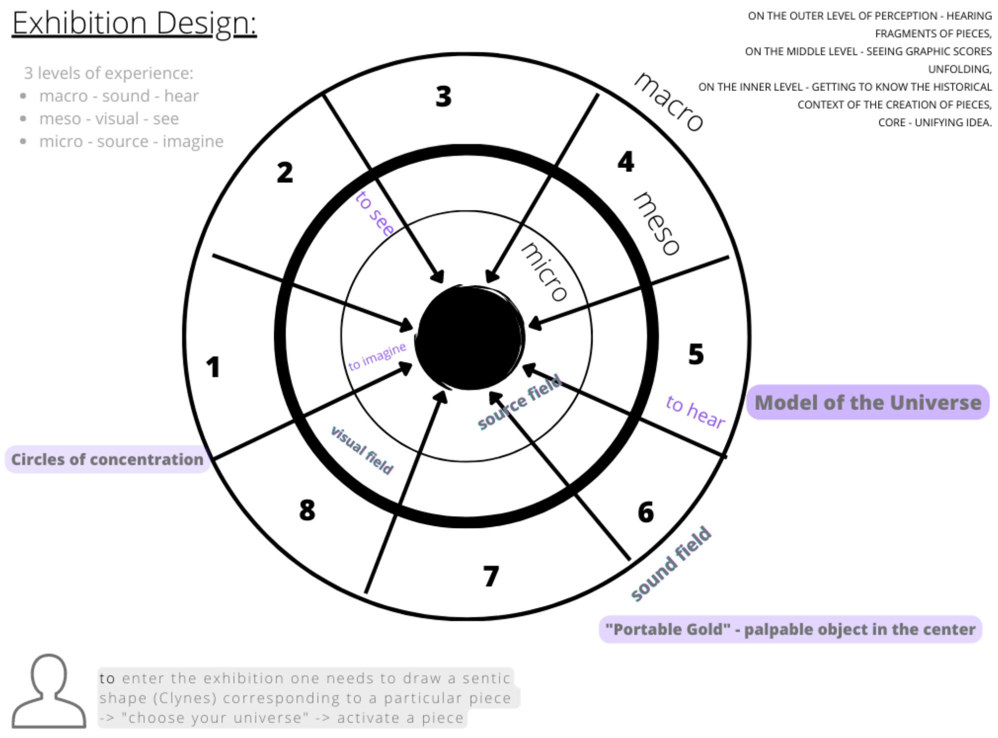
VI. APPENDIX

- Scheme 1

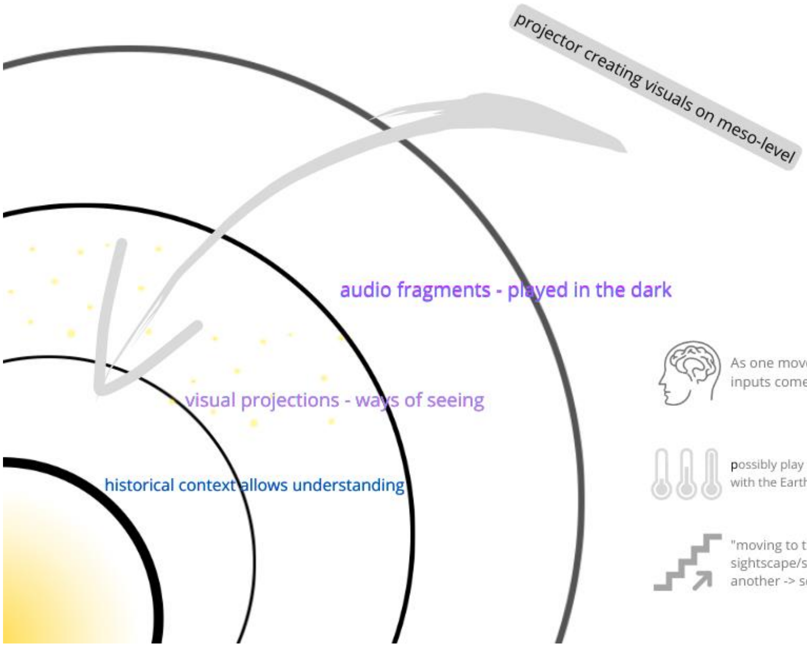


ON THE OUTER LEVEL OF PERCEPTION - HEARING FRAGMENTS OF PIECES,
ON THE MIDDLE LEVEL - SEEING GRAPHIC SCORES UNFOLDING,
ON THE INNER LEVEL - GETTING TO KNOW THE HISTORICAL CONTEXT OF THE CREATION OF PIECES,
CORE - UNIFYING IDEA.

to enter the exhibition one needs to draw a sentic shape (Clynes) corresponding to a particular piece -> "choose your universe" -> activate a piece

- Scheme 2

sketch for the exhibition design:


projector creating visuals on meso-level
audio fragments - played in the dark
visual projections - ways of seeing
historical context allows understanding

As one moves closer to the core - more sensorial inputs come into play.

possibly play with heat/temperature that would correlate with the Earth core idea and media saturation.

"moving to the Earth core" - creating a sightscape/steps for the transition from one zone to another -> sense of movement/progress.